

LEAFLETS OF PHILIPPINE BOTANY

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PALAWAN RUBIACEAE

By

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ANTIRRHOEA Comm.

Antirrhoea philippinenses (Benth.) Rolfe.

Field-note:—Shrubs; stem few inches thick, subterete, 10 to 15 feet high, branched from below the middle; wood hard, heavy, odorless and tasteless, dingy white or brownish in the center; bark thin, yellowish except the rather smooth and gray epidermis; branches spreading, finely and laxly rebranched; leaves membranous, nearly flat and with recurved tips, a trifle paler beneath; flowers subpendant; corolla green as the calyx but in full anthesis turning yellowish or even orange red; fruit juicy, obscurely angular and with roundly truncate ends, 0.33 inch long, deep purple.

Represented by number 13237, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, May, 1911.

Gathered from seepage ledges along the wooded flanks of the Iwahig river at 1000 feet.

Not quite typical, for the leaves are fewer nerved and less hairy beneath.

Antirrhoea livida Elm. n. sp.

A shrub; stem 7.5 cm. thick, 3 to 5 m. high, its ascending

main branches from below the middle; wood solid, hard, nearly cremeus, odorless, bitterish, scaling in very thin plates or smooth and with a green hypodermis; branches ultimately numerous rebranched, widely spreading, the suberect twigs very lax, the young portion olivaceously bristly. Leaves exceedingly variable in size, chiefly clustered at the ends of the branchlets, opposite, rotately or horizontally spreading, soft membranous, deeper green above, greenish brown when dry, the very short obtuse tips recurved, otherwise flat or nearly so, base obtusely rounded or subtruncate, the smaller leaves oblong, the larger ones rotund, hairy especially beneath, the larger blades 1 dm. long by 6 cm. wide across the middle; midvein prominent beneath, soft and densely pubescent; lateral pairs very oblique, their strongly curved tips more or less united, similarly pubescent, cross bars and reticulations faint yet evident; petiole 5 to 7.5 mm. long, pubescent; stipules 1.25 cm. long, soft hairy, setaceously acuminate. Inflorescence axillary, ascending upon 1 to 3 cm. long very slender olivaceous peduncles; flowers usually 3-clustered at the ends, the middle or central flower sessile, the lateral ones pedicellate, subtended by bristly hair-like bracts; calyx soft pubescent, 5 mm. long, the basal portion obscurely constricted and bristly hairy; the 4 teeth sharply acuminate, also pubescent on the outer side, subpersistent; corolla ochraceous, appressed pubescent on the outside, tubular, gradually narrowed toward the base, terete, nearly 1 cm. long; lobes 4, ovately obtuse, 2 mm. long or less, glabrous on the upper side; stamens 4, included just below the throat, filaments glabrous and very short; anthers 2.25 mm. long, linear, rounded at their ends; style terete, glabrous, the stigmatic portion forked; fruits usually solitary from the distal ends of the very slender and olivaceous peduncles, sessile, 1.5 cm. long at least, bristly in the young state, when old nearly glabrous, shining lividus, juicy, angular, truncately rounded at both ends, subtended by the persistent bracts; calyx also persistent with its teeth or lacinae, 7.5 mm. across.

Type specimen 12968, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

In shallow red soil overlaid on a sheet of gravel stones in humid woods or forests at 250 feet.

This number is at once distinguished from 13237 or the preceding species which I allow to pass as *A. philippinensis* (*Benth.*)

Rolfe. This new species has exactly the same leaves as my *A. benquetensis* but its drupes are twice as long and distinctly angular. Again, the drupes of number 12968 are the same as on my *Timonius attenuatus* but the leaves are very different. Our Javan specimens of *T. hirsutiusculus* Burck have very short fruits and there still remains a question whether my long fruited *T. attenuatus* can be referred to Burck's species, despite the apparent similarity of their leaves.

DIPLOSPORA DC.

Diplospora sessile Elm n. sp.

Strict, erect shrubs; stem terete, 2.5 cm. thick, 3 m. high, occasionally branched toward the top; wood dingy white, quite hard, without odor or taste; bark dull gray or brown, thin, relatively deeply checked longitudinally; main branches suberect, numerous rebranched toward the distal ends; twigs comparatively short, angular and subcompressed, grayish white, glabrous, thickened at the leaf scars. Leaves opposite, copiously scattered along the numerous branchlets, 1 to 2 cm. apart, sessile, strictly ascending, flat, rigidly coriaceous, very smooth on both sides, lucid, paler green beneath, curing brown, cordately ovate, apex obtuse, 3 to 4 cm. long, averaging 2 cm. wide across the middle or a trifle below it, entire; midvein quite conspicuous beneath toward the base; the lateral pairs 5 to 7, oblique, very obscure, reticulately forked at their ends, reticulations obsolete; petioles very thick and only the length of the sinus; stipule glabrous, caducous, rigid, brown, acuminate triangular, 4 mm. long. Inflorescence erect, axillary, 3-flowered, upon short stout bracteate peduncle; interaxillary bracts glabrous, rigid, close to the stem, bristly hairy at the base on the near side, 6 mm. long, 4 mm. wide across the bars, the upper one half acuminate and folded on the ventral side; flowers subsessile or upon short thick stalks, subtended by a pair of bracts which are of diverse sizes and finely ciliate along the edges; calyx turbinate, pulverulent, 3 mm. long, the upper one third terminated into 4 sharply acuminate segments; buds imbricate, slightly twisted from left to right, 3 to 4 mm. long, thick and tubular below the middle,

glabrous except the pubescent throat; segments 4, ultimately spreading and recurved, oblong, obtusely rounded at the apex, splitting two thirds down from the apex; stamens 4, inserted upon the throat, alternating with the segments, upon short glabrous filaments; anthers 0.75 mm. long, ovate, basifixed, sharply acute, emarginate at base; style 2 mm. long, hairy except at the base, the upper one half divided into 2 stigmatic lobes; fruit erect, glabrous, subellipsoid, ruber red, 7.5 mm. long, with few to several seeds imbedded in the rather juicy white meat; seeds brown, appearing striate or shredded, compressed, more or less elliptic, apparently attached to a membranous-like central placenta.

Type specimen 13139, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, May, 1911.

This fine species was discovered along a gravelly stream bed coursing through a wooded flat at 500 feet altitude, between the two main forks of the Iwahig river. Common in this sitio, otherwise not seen.

GARDENIA Linn.

Gardenia merrillii Elm.

Field-note:—Erect shrub; stems strict, several in the cluster, 1 inch thick, 5 to 9 feet high, terete, only sparingly branched toward the top; wood odorless and tasteless, moderately solid, pith quite large, dingy white; bark grayish brown, minutely checked, yellowish except the epidermis; twigs green, divaricate, lax, relatively short; leaves coriaceous, horizontal, shallowly folded, paler green beneath, margins coarsely wavy; flowers strongly fragrant, erect, white especially the segments, calyx always green; fruit also erect, globose, smooth, hard, green and densely streaked with chocolate brown, when nearly ripe turning yellowish and become nearly 2 inches in diameter, each of the halves with more than several seeds.

Represented by number 13126, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

Gathered in dry compact stony soil of open shrubberies or light woods at 50 feet. This is a handsome species, both in

the flowering and fruiting states. It can be trimmed to become most any shape of an erect shrub and in favorable places it assumes a subscandent habit. The altitudinal range at which it thrives is considerable and it is known to extend from the west central Visayan region through Palawan into Borneo.

Gardenia glutinosa Zoll.

Field-note:—A middle sized tree; stem subterete, nearly 2 feet thick, somewhat crooked, 40 feet high, mostly branched toward the top; wood moderately hard, without odor or taste, stramineous white throughout; bark smooth, yellowish gray on the outside, dull cremeus otherwise, with a green hypodermis; main branches spreading, numerous rebranched, forming a dense flattish crown; twigs short, suberect, the young portion waxy covered; leaves crowded, ascending, submembranous, deeply curved upon the upper side, much paler beneath, the veins whitish, tips recurved; flowers erect, solitary, terminal, the calyx boot green; corolla 6 inches long, the tube pale yellow, the spreading segments creamy white at first, flavus when old; fruit erect, subglobose, nearly 2 inches in diameter; stamens and pistil pale white, not turning yellow with age but soon undergoing decay, the stigma very large and succulent.

Represented by number 13064, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

Only one tree was found in humid fertile forests at 750 feet along the trail to Napsan.

This is to be carefully examined with my number 12670 from Sibuyan island and which I distributed as *G. longiflora* Vid. Our Palawan plant appears different and may be true *Zollinger's* species.

Gardenia segmenta Elm. n. sp.

Small and erect tree; stem 1.5 dm. thick, 7 m. high, mostly branched from above the middle; wood soft, dingy or sappy white, odorless but with a distinct bitter taste; bark yellowish gray and smooth on the outside, white on the inner side; main branches spreading, numerous and crookedly rebranched, the

slender ultimate ones with glabrate and suberect tips. Leaves submembranous, opposite, 1 to 3 pairs at the ends of the branchlets, horizontal, the abrupt sharply acuminate tips recurved, much paler green beneath, glabrous, drying green though unequally so on the 2 sides, obovately oblong or broadly oblanceolate, entire, base slenderly cuneate, blades 17.5 cm. long by 6 cm. wide above the middle; midvein whitish in the fresh state, conspicuously raised beneath, grooved on the upper side; lateral nerves 14 to 19 pairs, parallel, oblique, tips curved and gradually disappearing, also prominent, glabrous, cross bars very faint; petiole 1 cm. long or longer, pulverulent especially along the lower side; stipule brown, thin, caducous, at least 1 cm. long, oblong, grayish hairy on the inner side toward the base, otherwise glabrous, obtusely pointed. Flowers usually solitary, terminal, suberect, subtended by bracts, subsessile; calyx pale or light green, 4.5 cm. long, glabrous, the basal 1 cm. subcompressed and somewhat tapering toward the base, the middle portion strongly carinate or winged and extended into the 5 segments; segments green, finely nerved, linearly oblong, 4 mm. wide, 2 cm. long, subfalcate and acute toward the apex, occasionally with blunt dwarfed intermixed appendages or lobes; corolla tube creamy white, 6 cm. long, 6 mm. thick, subglabrate; lobes in the bud strongly imbricated and twisted from right to left, similar in color but soon turning deeper yellow, averaging 9, much narrowed and unequal at the base, oblong, 5 cm. long by 1.5 cm. wide across the middle, deflexed; stamens as many as there are corolla segments, inserted upon the glabrous throat, linear, 1.5 cm. long, obtuse at apex, striate and more or less twisted, upon short and glabrous filaments, alternating with the segments; style 1.25 mm. thick, terete, glabrous especially the basal portion; ovary imbedded, bearing a thick more or less rugose glabrous dark brown rim; ovules very numerous, arranged upon 5 linear placentae.

Type specimen 13153, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, May, 1911.

Discovered in gravelly soil of a moist forested flat at 500 feet near the Iwahig river.

It differs particularly from *G. barnesii* Merr. in the calyx and from *G. pseudosidium* Blco. in the corolla segments. There are other minor differences.

HEDYOTIS Linn.

Hedyotis perhispidata Elm. n. comb. *Lasianthus hispidus* Elm. Leaf. Philip. Bot. I; 10, 1906.

Field-note:—Harsh or very scabrous suffrutescent undershrubs or perennial herbs; stem single or few to several from the same root, flexible, terete, greenish, freely rebranched from the middle; the branches also slender, spreading and resting upon other herbaceous or ligneous plants; leaves scabrid, flat, chartaceous, paler beneath; inflorescence very short, ultimately dichotomously branched and divaricately disposed, spreading, dull green except the small yellowish white corolla; infrutescence short, loosely paniculate or cymose; valves ellipsoid, 3 mm. long, hispid, terminated by the 4 persistent acuminate calyx teeth, 2-celled; the valves or cocci 3 to 5-carinate on the dorsal side, flat on the ventral side, 2 mm. long, obovoidly ellipsoid, short pointed at the base, rounded at the apex, the ventral side open along the medium line; seeds rugose, dark brown, 0.75 mm. across, 5 in each cell, imbedded in a somewhat fleshy membrane, sub-compressed, irregularly rounded from the side view.

Represented by number 12735, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

Very common in dry stony soil along gravelly creek beds or in other poor soil among herbaceous thickets of light wooded flats at 250 feet.

By the nature of the ripe fruit it belongs to *Hedyotis* rather than to *Lasianthus*, and since the specific name "hispidata" has already been used in the former genus, the prefix "per" is applied for the sake of distinction at least.

Hedyotis pulgarensis Elm. n. sp.

An erect, laxly branched undershrub; branchlets terete, glabrous, green, slender. Leaves scattered all along, opposite, drying green on both sides, slightly paler beneath, glabrous, ascending, flat or only the slenderly acuminate tips recurved, quite variable in size, entire, acute or acuminate at base, lanceolate, the larger blades 1 dm. long by 1.75 cm. wide below the middle, membranous, frequently smaller especially toward the tips of the

branches; midvein conspicuous beneath; the 3 to 5 lateral nerves very obscure from both sides, ascending, tips usually united one third distance from the margin, reticulations none; petiole less than 1 cm. long, very slender and glabrous; stipule also glabrous, 7.5 mm. long, broad at the base, acuminate pointed, the sides but especially the apex pectinate. Inflorescence glomerated in the uppermost leaf axils, the fruits in the lower leaf axils; calyx gradually widening from the base upward, glabrous, pale whitish except the greenish tipped calyx segments, nearly 3 mm. long; teeth acute, 4, strict, 1.25 mm. long; corolla white, hyaline below the middle in the dry state, otherwise drying brownish, narrowest toward the base, 5 mm. long, glabrous except the few whitish hairs in the regions of the throat inside; segments 4, ovately obtuse, 1.5 mm. long or a trifle longer, rotately spreading and ultimately recurved; stamens 4, upon the throat and alternating with the segments; filaments very slender, 1 mm. long, glabrous; anthers basifixed, linearly oblong, ends blunt, 0.75 mm. long; style slender, glabrous, scarcely as long as the tube, whitish when dry; stigma lobes brown, short, blunt, pulverulent or puberulent; fruit 5 mm. long, elliptically elongated, terete, greenish especially the persistent nearly 2 mm. long calyx teeth; the 2 halves plano convex, opened along the medium horizontal region, crustaceous; seeds in each cell or half black, irregular in shape, angularly compressed, 1 mm. across.

Type specimen 13212, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, May, 1911.

This low *Hedyotis* adorns the path along a heavily forested ridge at 3000 feet altitude.

Its leaves are entirely too slender to be classed with *H. magallanensis* Elm.

Hedyotis kingiana Elm. n. sp.

A suffrutescent scrambler; stems inclined to twine, terete, tough, 7.5 cm. thick, yellowish brown, green and subolivaceous pubescent on the younger portion, divaricately branched all along, the ultimate ones relatively short and suberect. Leaves copious, submembranous, ascending, only slightly folded upon the darker green pulverulent upper side toward the base, beneath short but soft pubescent, green when dry, those at the distal ends

usually smaller, the larger blades 5 cm. long by 3 cm. wide below the middle, edges entire, gradually tapering to the acute to acuminate apex, base broadly rounded or subcordate; petiole 5 mm. long more or less, densely hairy; midvein densely pubescent especially toward the petiole; lateral nerves 3 or 4 on each side, only 2 in the small blades, strongly curved and ascending, the basal 2 or 3 pairs arising from below the middle, the uppermost pair arising from the middle, reticulations none; stipule similarly pubescent, 4 mm. long, very broad, the middle portion extended into a few pubescent bristles. Inflorescence green except the darker green calyx segments, olivaceous pubescent in the dry state, paniculately corymbose, 3 to 5 and even 8 cm. long, branched from above the middle; peduncles strict, 1 to 3 cm. long, usually 3; pedicles of the capitulae also strict, the lateral ones at right angles and 5 mm. long, subtended by hairy foliaceous bracts less than themselves in length; flower heads subglobose, 7.5 mm. in diameter, severally flowered, the fruiting heads scarcely larger; calyx campanulate, 3 mm. long, pubescent on the outside, glabrous within, hyaline toward the base, bearing 4 rather linear green teeth one half as long; corolla creamy white, 5 or more mm. long; segments 4, united only for the basal 1 mm., 3-veined, glabrous on the outside, heavily bearded along the midvein on the upper side below the middle, linearly oblong, obtusely rounded at the apex, ultimately strongly recurved upon the underside, the short tube glabrous; stamens also 4, alternating with the petals and inserted upon the throat; filaments 2 mm. long, subcompressed, brown, glabrous except the densely bearded ventral middle side; anthers 1 mm. long, linearly oblong, with rounded ends; style strict, glabrous, as long as the corolla, stigma lobes curvingly divergent, thick, blackish, papillose on the stigmatic surface, 1 mm. long.

Type specimen 12716, *A. D. E. Elmer*, Brooks Point (Addison Peak), Palawan, March, 1911.

Found sprawling over thickets composed of coarse grasses, sedges and low shrubs in dry hot sterile soil of hillocks at 500 feet. Dedicated to *Sir George King*, an eminent English botanist.

This species is very near to *H. prainiana* King and I have considered it as that in my first article. Recent study of more material revealed a number of specific differences.

IXORA Linn.

Ixora palawanensis Merr.

Field-note:—Lax and erect undershrub; stem terete, 0.5 inch thick, occasionally branched from near the ground, only sparingly rebranched toward the top; wood moderately soft and dirty white, without taste or odor; bark smooth, brown; leaves scattered along the branchlets which are usually recurved, flat, coriaceous, dark green except the lighter lower surface, the young leaves pale green; inflorescence terminal, erect or suberect, the stalks ruber, the bracts greenish, the corolla tube similar in color, the 4 rotate or descending segments miniatous, the stigma with an exerted portion of the style purple; fruits red.

Represented by number 12821, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

Here and there scattered in either gravelly or other good soil of light wooded flats at 750 feet.

Ixora intermedia Elm. n. sp.

A slender erect tree; stem subterete, 7.5 cm. thick, 7 m. high, crooked, branched from below the middle; wood hard and heavy, odorless and tasteless, dingy yellowish white, the outer portion lighter than the darker central mass; bark testaceous except the nearly smooth yellowish gray epidermis; branches divaricately spreading, slender, freely rebranched, the ultimate ones glabrous. Leaves opposite, subcoriaceous, also glabrous, lighter green beneath, nearly flat, horizontally spreading, 1 to 3-clustered toward the end of the branchlets, dissimilar brown in the dry state, very unequal in size, oblong, the larger blades 2 dm. long by 7.5 cm. wide across the middle, gradually tapering to the acute apex and base, entire; midvein stout, the 9 to 11 ascendingly curved lateral pairs with tips more or less archingly united, reticulations coarse and quite evident; stipule glabrous, broadly ovate, the median line projecting into an acute point, 5 mm. broad, scarcely longer; petiole 1 cm. long, grooved on the upper side, also glabrous, stout; infrutescence always terminal; peduncles strict, green, usually 3, divaricately spreading, subglabrous, subtended by stipular bracts, 7.5 cm. long; main branches

1 to 3 cm. long, from above the middle, similarly spreading, subtended by involueral bracts, secondary branches similar; flowers congested, short pedicelled; calyx 2 mm. long, ellipsoid, glabrous, toothed, green but turning light pink; fruits pale white, subglobose or obscurely compressed, 7.5 mm. across, when ripe reddish; the 2 stone-like seeds rugulose on the dorsal side, concave on the ventral, circular, 6 mm. across, centrally attached.

Type specimen 12957, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

Discovered in stony soil of dense woods along a dry stream bed at about 50 feet altitude.

Intermediate between *I. barbata* Roxb. and *I. cumingiana* Vid.

Ixora leucocarpa Elm. n. sp.

Suberect shrub; stem terete, 2.5 cm. thick, 1 to 3 m. high or even higher, only very sparingly branched from the middle; the thin sapwood watery white, otherwise whitish, quite hard, closely grained, without odor or taste; bark smooth, dull brown, castaneus beneath the epidermis; branches sparse, crooked. Leaves opposite, few pairs scattered or frequently with only a pair, diverse in size, chiefly at the ends of the glabrous twigs, descending, rigid and thickly coriaceous, only a trifle recurved toward the acute or roundly obtuse apex, base cuneate, glabrous, deep green above, much paler so beneath, curing unequally dull brown, the entire margins minutely involute when dry, the larger blades 2 dm. long by 8 cm. wide above the middle, obovately oblong or the smaller ones oblanceolate; midvein caniculate above, conspicuously raised beneath; lateral nerves 5 to 7 or even 9, divaricate, comparatively very obscure, their tips archingly united 5 mm. from the margin, equally visible from the upper side, reticulations obsolete; petiole very stout, 1 to 1.5 cm. long, glabrous, when old becoming scurfy. Infrutescence terminal, always erect, solitary, 3 to 5 cm. long, peduncle 2 to 3 cm. long, glabrous, subtended at the base by 2 pairs of unequal bracts; the larger pair of bracts oblong and 7.5 mm. long, the smaller pair 5 mm. long, broadly ovate and sharply pointed, all glabrous; branches from the top only, short yet freely rebranched, spreading, forming a condensed 2 to 3 cm. thick infrutescence;

calyx nearly 3 mm. long, glabrous, toothed, campanulate, upon short ebracteolate pedicels; corolla pure white, 1 cm. long; fruits compressed globose, less than 1.25 cm. through, bearing the minute persistent calyx, chalky white at all stages; seeds 2, circular, centrally attached, concave on the ventral, convex on the dorsal side.

Type specimen 12894, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

This *Ixora* with white flowers and fruits is quite commonly scattered in loose fertile soil or in a kind of adobe flat of woodlands or in humid forests from 250 to 1000 feet.

Quite distinct from *I. crassifolia* Merr. though related to it.

Ixora filmeri Elm. n. sp.

Erect undershrub; stem 5 cm. thick, 3 m. high, mainly branched from above the middle; branches lax and flexible, freely rebranched, glabrous, gnarly at the point of branching; wood brownish white, rather tough, odorless and without taste; bark smooth, brown. Leaves opposite, scattered along the twigs, glabrous, drying dull brown, quite variable in size, the average blades 1 dm. long by 4.5 cm. wide across the middle, obovately oblong or merely oblong, apex obtuse, base obtusely rounded, entire, horizontal, flat, thinly coriaceous, darker green above, the young ones pale; midvein prominent beneath, grooved above, reddish brown when dry; lateral nerves 9 to 11 pairs and relatively obscure, equally visible from the upper side, alternating with rather prominent secondary ones, divaricate, straight, interarchingly united, reticulations quite prominent from both sides; petiole 3 mm. long, stout, glabrous; stipule 3 to 5 mm. thick, broadly ovate, with a carinate and slenderly acuminate point. Peduncle from 2 to 5 cm. long, slender, glabrous, erect or ascending, terminal or from short specialized lateral branches, subtended by a whorl of imbricated sharply acuminate bracts which themselves are frequently subtended by a pair of foliaceous bracts; inflorescence umbellately cymose, spreading, 3 to 4 cm. across; branches and pedicels short, subtended by very slender bracteoles; calyx cup shaped, 1.5 mm. long, glabrous, rim entire or occasionally apiculate; corolla varying from 1 to 2 cm. in length, wholly glabrous; tube slender, green except the

middle atropurpureus portion; segments white, 5 mm. long, oblongish elliptic, imbricate in the bud state, rotately spreading or even reflexed in anthesis, 4; stamens of the same number, alternating with the calyx segments, upon the throat, subsessile or usually upon 1 mm. long glabrous filaments; anthers yellowish white, 4 mm. long, lanceolately linear, sagittate at the base, the emptied cells folded and more or less twisted, basifixed, verticellately spreading; style slender, also atropurpureus, glabrous; stigma of 2 recurved flattened fleshy forks, little exceeding the corolla; ovary glabrous, well inbedded in the calyx, fruits ovoidly compressed, about 1 cm. long, 2-celled; its white meat juicy, glabrous, green but when exposed turning bright or light atropurpureus; seeds 2, circular, centrally attached on the hollowed ventral side, convex on the dorsal.

Type specimen 12719, *A. D. E. Elmer*, Brooks Point (Addison Peak), Palawan, March, 1911.

This species was found to be rather common in the sand gravelly soil of woods along the seacoast. I take pleasure in naming it after *Mr. E. L. Filmer*, assistant governor of Palawan and at that time stationed at Brooks Point.

It approaches most closely to *I. philippinensis* Merr. but specifically distinct.

LASIANTHUS Jack.

Lasianthus obliquinervis Merr.

Field-note:—A suberect laxly branched undershrub in moist fertile humus covered soil of dense forests at 1000 feet altitude.

Represented by number 13252, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, May, 1911.

MORINDA Linn.

Morinda philippinensis Elm.

Field-note:—Scandent and sprawling; stem terete, made rough by very coarse excrescences, crooked, 1 inch thick; wood

very soft, bendable, flavus, divided into several radial divisions, porous, sweetish, odorless, the yellow portions divided by the sappy white sapwood; bark brown to gray, lenticelled or ex-crescent; branchlets numerous, forming dense interlaced masses at the top, the slenderer ones drooping; leaves descending, thinly coriaceous, strongly folded upon the upper slightly greener surface; heads ascending, 1 to 3-clustered, verticellately spreading, green as the peduncles; the odorless flowers also green except the whitish hairs, caducous, the florescent heads less than 0.5 inch in diameter; the immature fruits again as large, solid, yellowish on the inside; mature heads nearly 2 inches in diameter, yellowish.

Represented by number 12928, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

Very common in thickets and light woods of flats along the Iwahig river at 250 feet.

***Morinda bartlingii* Elm. n. sp.**

Twining and sprawling over thickets, forming more or less tangled masses; stem terete, brown, nearly 5 mm. thick, scatteringly branched, very flexible; branchlets usually in pairs, short, erect, leaf bearing, glabrous except the ultimate ascendingly curved tips; twigs roughened by the prominent leaf scars. Leaves opposite, scattered along the young twigs, terminally clustered in the old ones, diverse in size and shape, the young ones lanceolate, the mature ones obovately oblong, the larger blades 5 cm. long, 2 cm. wide above the middle, entire, ascendingly spreading, submembranous, usually concave on the upper darker green side, dull brown when dry, soft pubescent especially on the nether side, apex rounded and merely apiculate, attenuate or cuneate toward the base; midvein evident beneath especially toward the base, lateral nerves obsolete; petiole 5 mm. long or longer; stipules caducous, brown pubescent, membranous, 3 mm. long, broad, terminated by 2 very minute and slender points. Inflorescence terminal, upon 3 to 5 peduncles which in the fruiting state are softly hirsute, 5 to 7.5 mm. long, green; flowers sessilely clustered upon a pubescent somewhat thickened disk or receptacle, usually several in a head, greenish; calyx dark green, 3 mm. long, tubular, nearly 2 mm. thick, subglabrous

toward the truncate or scarcely 5-toothed rim; corolla angular in the bud state, green, subglabrous on the outside and on the inside of the tube toward the base, 5 mm. long, the upper two thirds divided into 4 or 5 oblongish segments; throat hairs whitish, profuse; segments with obtuse tips which are usually hardened, thickened and inflexed, ultimately recurved; filaments glabrous, slender, mostly adnate to the corolla tube, only 1 mm. free; anther, 1.5 mm. long, oblong, with rounded ends, subbasifixed; fruiting heads solid, easily separating from the persistent peduncles, irregularly or flatly globose, 1 cm. across, bearing few to several persistent calyx rims, puberulent especially toward the base, aurantiacus when mature.

Type specimen 13037, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

Only once found in an open spot of forests at 50 feet altitude, in dry well drained and fertile soil among thickets of grasses and low shrubs. Named after the celebrated botanist, *Friedrich Gottlieb Bartling*.

It approaches *M. longifolia* *Bartl.*

MUSSAENDA Linn.

Mussaenda philippica Rich.

Field-note:—Quite a slender tree; stem 8 inches thick, 20 feet high, terete, crooked, branched from above the middle; wood moderately hard, odorless and without taste, dingy white; bark brown, densely lenticelled, pale umber except the epidermis; main branches ascending, freely rebranched; leaves ascending and strongly recurved, thinly coriaceous, deeply folded upon the darker green upper side; inflorescence erect, green as is also the calyx; corolla greenish on the outside, the segments on the outside with their tips very pale green, the upper side aurantiacus; the outer calyx segments of the outer flowers occasionally petaloid.

Represented by number 12792, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

In dry compact soil of the cogon region bordering woods at 250 feet.

NAUCLEA Forst.

Nauclea purpurascens Korth.

Field-note for 13006:—A bushy tree; stem 2 feet thick, subterete, soon divided into few ascending main branches, 25 feet high or higher; wood hard, heavy, burly, dirty yellowish white or brown, odorless and tasteless; bark scaling, yellowish gray, isabellinus except the epidermis; branchlets numerous, rather lax, the latericius angular apical portion suberect; leaves horizontal or the older ones descending, nearly flat but margins irregularly wavy, much richer green on the upper side; heads 1 to 3, terminal, erect or nearly so; calyx cremeus and soon withering, thereby turning brown; the exerted style and capitate stigmas sulphureus; receptacle yellow; the flowers possess a slight disagreeable odor.

Represented by numbers 13006 and 12983, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

The first number cited grew in stony soil along the Iwahig river bank at 500 feet; the second number was collected in well drained soil of a steep wooded slope at 2000 feet altitude.

OLDENLANDIA Linn.

Oldenlandia paniculata Linn.

Field-note:—Stem perennial or only biennial, flexible, somewhat creeping at the base, branched and taking root at the joints, dark green, angled; leaves horizontally spreading, much lighter green beneath, flat, coriaceous; pedicels and calyx green, the other parts of the odorless flowers white; capsule somewhat angularly flattened.

Represented by number 13034, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

In fine dry gravelly creek beds of dense woods at 50 feet altitude. Apparently introduced but not common.

OPHIORRHIZA Linn.

Ophiorrhiza pulgarensis Elm. n. sp.

Somewhat succulent herbs; stem one or more from the

same root cluster, terete, green, ascending, occasionally branched below the middle but usually toward the top, varying 1 dm. to 1 m. in height, base of stem ligneous; roots ample, fibrous; branches few, ascending, sparingly rebranched, crookedly virgate, latericius pubescent especially on the terminal or young portion. Leaves soft membranous, horizontally spreading, dark velvety green above, glaucous green beneath, pubescent especially on the lower surface, greatly varying in size, the normal blades 1 dm. long by 4.5 cm. wide across the middle or a trifle below it, oblong or ovately oblong, entire, obtuse or bluntly acute at apex, roundly obtuse at the base or subcuneate, oppositely scattered but usually crowded toward the top, light purple tinged in the dry state especially on the lower side; petiole 1 to 3 cm. long, latericius pubescent; midvein conspicuous from beneath, the 11 to 14 lateral pairs subparallel and ascendingly curved, reticulations obsolete; stipule pubescent, the broad basal portion 2.5 mm. long only, abruptly terminated by a 5 mm. long very slender point. Peduncle usually solitary, in the fruiting state 3 to 5 cm. long, erect, terminal, similarly pubescent, subtended by stipular bracts; branches at the top mostly, 3 to 5, circinately recurved, pale green except the pure white flowers, purplish tinged, all pubescent; pedicel hairy, about 2 to 3 mm. long, subtended by one or more unequal linear similarly hairy bracts; calyx ellipsoid, 3 mm. long, crisply pubescent, the upper one third composed of 5 linear hairy teeth; corolla 7 mm. long, sparsely pubescent on the outside except at the glabrous constricted base, the throat region on the inside densely woolly; segments 5, ovately obtuse, glabrous on the upper side, 2 mm. long; stamens normally 5, inserted upon the tube 1 mm. from the base, erect; filaments 0.5 mm. long, glabrous; anthers linearly oblong, with rounded ends, 1.25 mm. long, subbasifixed; ovary rim glabrous, otherwise enclosed by the calyx; style slender, glabrous, as long as the corolla, terminated by 2 short thick pulverulent lobes; capsule nearly 7.5 mm. wide, 3.5 mm. high, much flattened, ends rounded, dehiscing across the top and dividing into 2 valves, shining, smooth on the inner side, sparsely hirsute, the linear calyx segments still persistent; placentae 2, ascending, short clavate, distinctly pedicellate; seeds several to many on each placenta, glabrous, irregularly angular, less than 0.5 mm. across, brown.

Type specimen 12949, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

Collected it in moist soil of loose moss covered rocks near a stream at 1500 feet or becoming dwarfed plants in dry compact soil on forested ridges at about the same altitude.

In my first article on *Rubiaceae* page 22 of this publication, I keyed out *O. mungos* Linn. from the balance of our then known Philippine species by "Mature infrutescence and leaves usually staining red while drying." At that time it was suggested to me that the specimens turned red through the red stained poisoning liquid used. But all subsequent specimens of the above named species have also turned red. Furthermore, all the rest of our Philippine species in the herbarium have also been poisoned but without the red stain. These facts are verified in all herbaria having *Ophiorrhiza* collections. This new species also turns characteristically red while curing and certainly no staining liquid has yet been applied. In this mount Pulgar specimen I found the process of turning red 'while drying' exactly as I stated it in my key over five years ago. Apparently this same pubescent and reddish tinged plant extends southwards to Singapore.

PAVETTA Linn.

Pavetta palawanensis Elm. n. sp.

A slender shrub; stem 2.5 cm. thick, terete, 3 to 5 m. high, branched from below the middle; wood sappy white, rather hard or tough, without odor and taste; bark caesius, more or less mottled, its hypodermis green; branches few, lax, the young ascendingly curved twigs angular and avellaneus pubescent in the dry state. Leaves horizontally spreading, the abruptly acute or obtuse apex recurved, otherwise flat, coriaceous, much paler green on the finely pubescent nether side, the upper glabrous surface nearly black when dry, base cuneate, entire margins minutely involute, oblong or the smaller ones subelliptic, 17.5 cm. long excluding the stalk, 6.5 cm. wide across the middle or a trifle above it; midvein rather prominent beneath especially toward the base, the 5 to 7 main pairs of nerves ascendingly

curved, reticulations coarse and equally visible from both sides; petioles 1 to 2 cm. long, grooved along the upper side, similarly pubescent; stipule 5 to 8 mm. long, broad, acuminate pointed, scurfy brown or slightly hispid. Inflorescence terminal, erect, 1 to 3-clustered, 5 cm. long, branched from below the middle, subtended by stipular bracts; branches ascending, forming a corymbose panicle, all pubescent, the larger ones subtended by large bracts; the bracteoles subtending the short pedicels minute; calyx 3 mm. long, tubularly ellipsoid, nearly 2 mm. thick, subtended at the base by a pair of short hairy bracts, upon very short yet relatively thick pedicels, densely pubescent on the outside; calyx teeth obtusely oblong, 1 mm. long, glabrous on the inner side; corolla glabrous, the basal one third tubular, otherwise divided into 4 oblong segments, white; stamens also 4, upon the throat and alternating with the segments; filaments glabrous, less than 1 mm. long, compressed; anther linear, acute at apex, basifixed, sagittate, at least 5 mm. long, 0.75 mm. wide, more or less striate, recurved and verticellately spreading; style terete, 1 cm. long, finely pubescent in the region 1.5 mm. from the base, otherwise glabrous, gradually tapering toward the acuminate apex; ovary rim glabrous, well encased by the calyx, 2-celled, 1-ovuled in each.

Type specimen 12940, A. D. E. Elmer, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

Discovered in compact humus covered soil of a densely wooded flat at 250 feet.

Possibly nearest allied to *P. indica polyantha* Hook. and to *P. indica tomentosa* Roxb. In the Philippines there are several distinct species which can easily be placed under the descriptions of the above named varieties.

PETUNGA DC.

Petunga racemosa (Roxb.) K. Sch.

Field-note:—Erect shrub; stem terete, 15 feet high, 3 inches thick, terete, crooked; wood dingy white, hard, heavy, odorless and tasteless; bark reddish brown, finely checked longitudinally; branches from above the middle, divaricate, 3 feet long, only

occasionally rebranched, terete, pale green; leaves descendingly recurved, folded upon the upper darker green surface, thinly coriaceous; the ascending young infrutescence nearly viridis green.

Represented by number 12756, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

Collected in black compact humus covered soil of a wooded flat at 250 feet altitude.

PLECTRONIA Linn.

Plectronia pedunculare (Cav.) Elm.

Field-note:—A shrub, 5 to 9 feet high; stem 1 to 3 inches thick, branched from below the middle; branches droopingly spreading; leaves flat, membranous, pale green; flowers pendant, white.

Represented by number 13247, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, May, 1911.

In deep fertile moist soil of lightly wooded flats or among shrubberies bordering stream courses at 50 feet altitude.

Plectronia didyma (Gaertn.) Elm.

Field-note for 12829:—Slender and ascending tree; stem 5 inches thick, terete, its main branches arising from the middle, 15 feet high or long; wood finely grained, melleus especially toward the center, odorless and tasteless, rather hard; bark grayish white, mottled, green beneath the smooth epidermis, whitish on the inner side; branchlets spreading, lax, their ultimate subangular tips ascendingly curved; leaves coriaceous, mostly horizontal, flat except the abruptly recurved apices, paler green beneath, shining dark green above; inflorescence axillary, green, the corolla and inner organs creamy white, sweetly fragrant.

Represented by numbers 12829 and 13180, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March and May, 1911.

On a dry fertile well drained ridge at 1000 feet in woods festooned with climbing and sprawling bamboos. The last number cited was collected in red shallow soil with a gravelly subsoil along the wooded banks of the Iwahig river at 750 feet.

PSYCHOTRIA Linn.

Psychotria malayana Jack.

Field-note:—A slender erect shrub-like tree; stem 5 inches thick, subterete, 15 feet high or higher, branched from below the middle; wood soft or moderately so, dingy yellowish white, quite heavy, odorless, slightly sweet to taste; bark caesius, smooth, with a green hypodermis, the greater inner portion sappy white; main branches ascending, crooked, repeatedly branched at the top; twigs lax, suberect, the leaf bearing portion green; coriaceous leaves nearly horizontally spreading, lucid green on the shallowly folded upper surface, much paler green beneath; inflorescence erect and terminal, pale green except the pure white odorless and erect flowers.

Represented by number 12981, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

Gathered in red stony well drained soil of a wooded ridge at 2000 feet.

Psychotria manillensis Bartl.

Field-note:—A low erect and quite rigid suffrutescent perennial; stem terete, 0.33 inch thick, 1.5 foot high, tough or rather rigid, greenish, occasionally branched from the middle; leaves subglaucus green, a trifle deeper or brighter green beneath, chiefly horizontal, coriaceous, flat or only the tips recurved; infrutescence arising from the uppermost leaf axils, dark green, erect or on the lateral branches divaricate; fruits ovoidly ellipsoid, very dark green, terete, longitudinally striate, the bracts and persistent calyx also green; the smooth elongated ripe fruits shining vermilion red, ridged when dry.

Represented by number 12868, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

Quite commonly scattered in rich moist humus covered soil of dense woods and forests at 500 feet or at a higher altitude.

Psychotria voluta Elm. n. sp.

A twining climber; stem volute, terete, 5 mm. thick, branched,

glabrous even the young leaf bearing tips. Leaves opposite, usually crowded toward the ends, glabrous, spreading, unequal in size, subcoriaceous, dull green when dry, entire margins involute, sublucid on the upper side, paler green beneath, rotundly oblong or obovately so, roundly obtuse at apex, base obtuse, the larger blades 7.5 cm. long by 3.5 cm. wide across the middle or a trifle above it; midvein dark brown on the nether side and prominent toward the base; main lateral nerves 5 to 7 on each side, obscure, ascending, slightly curved except their tips, more evident from the upper side, reticulations very obscure beneath and evident on the upper side; petioles at least 5 mm. long, glabrous; stipule brown, rim-like. Inflorescence 3 cm. long, erect, terminal, usually single, branched toward the top; peduncle very finely puberulent, subtended by minute bracts and a pair of small leaves, 2 cm. long; corymb 2 cm. across, all the branches subtended by rather sharply pointed bracts; flowers few clustered at the ultimate branchlets, subsessile, subtended by small bracteoles; calyx glabrate, turbinate, 2.5 mm. long, 5-toothed, green; corollas twice as long, whitish, also glabrate except the villose throat, tubular below the middle, 5-segmented above this; stamens 5, alternating with the segments and inserted upon the throat, their filaments short, anthers yellow; style equalling the corolla, glabrous, the 2 short stigmas pulverulent.

Type specimen 13253, A. D. E. Elmer, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

It belongs to the *P. serpens* Linn. group.

***Psychotria palawanensis* Elm. n. sp.**

Erect shrub; stem 2.5 cm. thick, 3 m. high, terete, crookedly branched from above the middle; wood dingy white, moderately hard, odorless, slightly bitter; bark thin, smooth, brown on the stem, gray on the branchlets; twigs suberect, glabrous. Leaves leathery, drying dull green, glabrous, obovately oblong or oblanceolate, the normal blades 17.5 cm. long by 7 cm. wide above the middle, quite variable in size, margins entire, apex abruptly acute to obtuse, base cuneate, opposite, usually at the ends of the twigs; midvein brown, conspicuous beneath, also glabrous; lateral pairs 12 to 16, straw brown, shining, ascendingly curved, subparallel, the tips interarching, reticulations very

coarse and obscure; petiole stout, 1 to 2 cm. long, glabrous. Inflorescence terminal, suberect, usually upon very short and thick peduncles, glabrous, green stalks becoming brown when dry; main branches 1.5 to 2 cm. long, several in a subwhorl, corymbosely spreading, strict, di or trichotomously branched above the middle, all the branches subtended by vestiges of bracts, more or less angular or subcompressed; drupes obovoidly ellipsoid, coal black when mature and upon becoming dry, 7.5 mm. long, obscurely striate, the persistent calyx rim minute, 5 mm. thick above the middle; pyrenes 2, plano convex, pointed toward the base, obscurely 3 to 5-ridged on the back.

Type specimen 12737, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

In shallow humus covered soil underlaid with gravel stones of a slightly wooded flat at 250 feet altitude.

Ours approaches *P. plumeriaefolia* *Elm.*, yet distinct from number 3875 Forestry Bureau collection.

Psychotria repens *Elm.* n. sp.

A perennial prostrate suffrutescent creeper; stem terete, dark green, flexible, creeping below the humus, taking roots at the point of branching, only sparingly branched, 7.5 mm. thick, the distal ends ascending and leaf bearing, from 2 dm. to 2 m. long; branches short and erect or longer and ascending; roots blackish, fibrously branched, subligneous. Leaves horizontal or ascending from the base, shallowly recurved, coriaceous, deep green above with the veins marked by darker green regions, much paler green beneath, when dry nearly black on the upper glabrous side, grayish brown on the pulverulent nether surface, nearly flat, obovately oblong, 1 dm. long, 4 cm. wide above the middle, entire, apex short obtuse or acute, cuneately obtuse at base; midvein conspicuous beneath and brown scurfy or pulverulent; lateral pairs about 9, ascendingly curved, less pulverulent, cross bars and reticulations very obscure; petiole 5 mm. long, sparsely fuliginously hairy; stipule 1 cm. long, similarly hairy, apex divided into 3 or more ciliate lacinae. Inflorescence terminal, 2.5 cm. long, fulvus pubescent; usually more than 1 peduncle, subtended by stipular bracts; flowers in small clusters toward the end, subtended by bracteoles; calyx sessile, subar-

ticulate, subtended by a pair of unequal sharply acuminate and ciliate bracts, 5 mm. long, ferrugineously hairy on the outside, the upper one half divided into 5 sharply acuminate segments which are rather strongly 3-nerved; corolla white or tinged with brown, the 5 segments strongly recurved, subcampanulate in shape, caducous, 5 mm. long, the segment tips obtuse, glabrous except the whitish hairy throat; stamens as many, alternating with the segments and inserted upon the throat, the filaments glabrous, the anther bluntly oblong; ovary short, ovoidly ellipsoid, also glabrous.

Type specimen 12991, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

This distinct species was discovered in very moist humus covered soil of dense woods near a creek flat at 250 feet.

Quite rare and very different from other known Philippine *Psychotriæ* by its subherbaceous character and low creeping habit.

Psychotria pyramidata Elm. n. sp.

Suffrutescent; stem erect, 1 to 2 m. high, woody toward the base, 1 cm. thick, only occasionally branched, the branchlets crooked and with suberect tips, terete, glabrous. Leaves thinly coriaceous, ascending or horizontally spreading, glabrous, dull green above, much lighter or subglaucus green beneath, flat and only slightly recurved, curing grayish especially on the nether side, oppositely scattered, not numerous, oblong or oblanceolately oblong, the average blades 2 dm. long by 7.5 cm. wide a trifle above the middle but frequently smaller, apex bluntly obtuse or acute, base subcuneate and occasionally slightly inequilateral, entire, midvein minutely pulverulent, prominently raised; lateral pairs divaricate, 13 to 15 on each side, strict, tips anastomosing, much less prominent; reticulations more numerous and evident toward the entire margins; petiole up to 2.5 cm. long, ascending, subglabrous. Inflorescence strictly erect, terminal, solitary upon a nearly 5 cm. long peduncle which is usually subtended by a pair of foliaceous bracts or small leaves, pyramidally branched above the middle; its main branches in whorls, usually descending, strict, 1.5 cm. long, glabrous, subtended by a short involucre bract, dichotomously rebranched above the middle; the secondary and

ultimate branchlets more or less flattened and pulverulent, all subtended by bract vestiges; flowers in small groups, the middle or terminal one sessile, the lateral ones usually short pedicellate; calyx subglabrous or very finely puberulent, sessile and articulate, 2 mm. long, gradually widening toward the truncate rim which is nearly as wide; corolla glabrous except the cinereous pubescent throat, 4 mm. long, white, at the base subhyaline; segments 5, ligulate, obtuse at apex, ultimately splitting down to below the middle; stamens as many as there are segments and alternating with them; filaments very slender, glabrous; anther oblong, with subtruncate ends, 1 mm. long by 0.5 mm. in width, subversatile; ovary circular, much flattened, glabrous; style 2 mm. long, glabrous toward the base, otherwise sparsely hairy, thickened and subentire or bilobed at the stigmatic portion; drupes obovoid, glabrous, 7 mm. long, smooth and terete, green, then luteous, finally dark black while still attached to the plant, at least 4 mm. thick above the middle, calyx obsolete, 10-costate in the dry state, divaricately spreading; pyrenes 2, plano convex, rounded at apex, pointed at base, 5-ridged on the dorsal side.

Type specimens 13093 for flower and 13183 for fruit, A. D. E. Elmer, Puerto Princesa (Mt. Pulgar), Palawan, April and May respectively, 1911.

This undershrub is always found in moist more or less stony soil of deeply shaded places near water courses from 500 to 2500 feet elevation.

Its low sparingly branched habit coupled with the erect pyramidal infrutescence serve to distinguish it at once.

Psychotria iwahigensis Elm. n. sp.

A fine scandent shrub; stem subligneous, the size and shape of an ordinary lead pencil, very flexible, greenish or when old becoming brown, cleaving tightly to its support, few branched 5 m. from the ground; branches slender, only sparingly rebranched, curved, somewhat drooping and with erect tips, the young portion fulvous tomentose. Leaves descending, oppositely scattered along the twigs, thinly coriaceous, flat, glabrous and dark velvety green above, much paler green and minutely pubescent beneath, the obtuse tips only slightly recurved, entire, oblong,

base subcuneate or acute, the average blades 1 dm. long by 4 cm. wide at the middle, curing brown, entire; midvein conspicuous beneath and ferrugineously tomentose in the dry state; lateral pairs 7 to 9, much less conspicuous, ascendingly curved, similarly pubescent, tips reticulately united, reticulations very obscure; petiole 1 cm. long, fulvus, caniculate along the upper side. Peduncle solitary, terminal, puberulent or cinereous, suberect, 3 cm. long; inflorescence corymbosely paniculate, 4 cm. across, 2 cm. high; branches similar in vestiture, subtended by a whorl of minute sharply pointed bracts, secondary branchlets from above the middle, all subtended by bracteoles; flowers in whorls at the end of the ultimate branchlets; pedicels 2 mm. long, subtended by blunt and short bracteoles; calyx rim-like, hardly apiculate, cinereous as are also the pedicels and bracteoles, 1.5 mm. across; corolla 5 mm. long, subglabrous and narrowest at the base, otherwise umbrinus pulverulent on the outside; the 5 segments nearly one half as long, glabrous on the upper side, acuminate, reflexed; tube also glabrous except the grayish hairy or woolly throat; stamens of an equal number, alternating with the segments, adnate or inserted upon the corolla throat, usually a trifle shorter than the corolla segments; filaments glabrous; anthers yellowish, 1 mm. long, oblong, with blunt ends, dorsifixed; ovary circular, glabrous, 1 mm. across, much less in height; style 2 to 3 mm. long, the upper portion thickened and becoming split into 2 stigmatic arms, glabrous, very slender toward the base, the stigmatic sides pulverulent or even granular.

Type specimen 13052, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

A tight tree trunk climber and forming loose masses at the top, in moist soil of a densely forested flat at 250 feet altitude. Quite rare!

Evidently related to *P. sibuyanensis Elm.*, yet one is glabrous the other pubescent.

Psychotria versicolor Elm. n. sp.

Tree-like or an erect shrub; stem 12.5 cm. thick, 7 m. high, terete, at the middle divided into main branches; wood hard and brittle, dingy white, odorless, bitterish; bark smooth, brown and

white blotched; branches freely rebranched, very crooked, the glabrous ultimate ones suberect, rather slender. Leaves ascending or horizontal, coriaceous, much paler green beneath, shallowly folded upon the upper dark green surface, drying blackish brown, acute apex recurved, cuneate or attenuate toward the base, opposite, more or less crowded at the ends of the twigs, oblanceolate to oblong, entire, very small leaves usually mixed in with the larger ones, the larger blades 15 cm. long by 4 cm. wide above the middle; petiole glabrous, up to 3 cm. long, flattened along the upper side, reddish brown when dry; midvein similar in color, prominent, also glabrous; lateral nerves less prominent, 9 to 12 pairs, ascendingly curved especially toward their tips which are usually united, reticulations equally obscure from both sides. Inflorescence terminal, erect, green except the creamy white corolla buds, glabrous, solitary, 5 to 8 cm. long, at the base subtended by a pair of foliaceous bracts, verticillately branched above the middle; the short divaricate branches subtended by very short usually ciliate involucrel bracts; flowers few clustered toward the distal end of the branchlets, subtended by similar bracts, sessile; calyx 3 mm. long, nearly as wide across the top, glaucous green, glabrous, more tapering toward the base, rim truncate or with mere vestiges of 5 teeth; corolla creamy white even in the bud state, oblong, nearly 1 cm. long, glabrous except the yellowish gray woolly throat; the 5 segments oblong, with incurved apical tips especially in the early state, in anthesis split down to below the middle; anthers also 5, alternating with the corolla segments and inserted or adnate from the corolla throat; filaments bearded along the inner side below the anthers, otherwise glabrous and somewhat compressed; anthers oblong, with rounded ends; style strict, glabrous; stigmatic lobes fleshy, compressed, 2, rounded at the apex, granular; ovary short ellipsoid, also glabrous, rather hard, well surrounded by the calyx; infrutescence 15 cm. long including the peduncle, at least 10 cm. wide, subpendulous, green; terminal drupes sessile, the lateral ones short pedicellate, 7.5 mm. long including the calyx rim, at least 5 mm. across the middle, glabrous, varying from green to auranticus red and finally nearly black on the same infrutescence; pyrenes plano convex, 5 mm. long, elliptic from the smooth ventral side, only 1 obscure ridge through the middle of the back, otherwise obscurely rugose but rather plump.

Type specimen 12763, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

It was rather commonly observed in gravelly soil along the wooded banks of the Iwahig river at 500 feet.

Another addition to a critical bunch, most closely to *P. similis Elm.* but leaves in our present species thicker, less pointed at both ends and the more numerous nerves bolder and plainly interarching. The arrangement of the flowers on the inflorescence is also quite different.

RANDIA Linn.

Randia uncaria Elm.

Field-note:—A lofty tree climber; stem terete, looping, 3 inches thick; wood soft, yellowish, a trifle bitter, odorless, the outside of the sapwood yellowish brown and juicy; bark relatively thick, brown on the stem, roughened with blunt lenticels, yellowish white on the inner side, yellowish brown; the main branches stem-like, long, looping, the free portions pendant; secondary branches divaricate, comparatively short, with a pair of stout retrorse spines along the upper side and about 1 inch from the point of branching, frequently with a single spine on the same side 2 inches further up, stems and twigs spineless; leaves subcoriaceous, horizontal or descending, flat, deep green above, paler beneath; inflorescence terminal, suberect, pale green even the corolla tube, sweetly fragrant, style and stigma creamy white, ovary apex creamy yellow; corolla segments rotately spreading, white.

Represented by number 12661, *Elmer*, Brooks Point (Addison Peak), Palawan, February, 1911.

In fine gravelly soil of forested flats at sea level. The Tagbanuas call it "Keri-keri."

Randia ebracteata Elm. n. sp.

A rather small gnarly tree; trunk nearly 3 dm. thick, 10 m. high, terete, branched above the middle; main branches spreading, forming a flattish crown, freely rebranched, the rather rigid

and glabrous twigs suberect; wood sappy white, rather soft, odorless, slightly bitter; bark smoothish, avellaneus except the grayish brown surface. Leaves opposite, mainly toward the ends of the branchlets, coriaceous, spreading in all directions, very deep shining green above even in the dry state, much paler green and duller beneath, drying brown, the entire margin wavy toward the recurved short obtuse apex, obtuse or cuneate at base, glabrous, obovately oblong or merely oblong, the average blades 15 cm. long by 6 cm. wide across the middle or above it; midvein very prominent beneath, fluted on the upper side of the blade, reddish brown, also glabrous; the 6 to 8 lateral pairs ascending, curved, their tips gradually becoming obsolete, reticulations not evident; petiole very stout, up to 2 cm. long, glabrous and brown; stipule broad, at least 1 cm. long, brown, oblong, the apex abruptly tapering into an acuminate point, entirely glabrous. Inflorescence paniculate from below the middle, 5 cm. long, usually upon 3 peduncles which are glabrous and subtended by stipule-like bracts; pedicels varying up to 5 mm. long, strict, slender, glabrate, ebracteolate; calyx yellowish green, glabrous, turbinate, 5 mm. long, 4 mm. wide across the top, terminated by 5 sharply apiculate teeth; corolla 6 mm. long, glabrous except the cinereous hairy throat; tube 2.5 mm. long or less, nearly 2 mm. thick, blackish striate; segments 5, rotately spreading or deflexed, thick, luteus, fully 3 mm. long, oblongish, obtusely rounded at the apex; stamens as many as there are corolla segments, inserted upon its throat and alternating with the petals; filaments also luteus, very short, flattened, glabrous, stout; anther erect, lance shaped, bilobed at the basifixed base, gradually tapering into a sharp point, 1.5 mm. long, more than 0.5 mm. wide across the base; style fleshy, 4 mm. long, terete, glabrous; stigma much thickened, 1.5 mm. long, the 2 lobes rugulose or papillose.

Type specimen 13114, *A. D. E. Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

Here and there found standing upon red stony soil of densely wooded banks of the Iwahig river at 500 feet.

All my material is without the bracts subtending the pedicels and the inflorescent branches. In *R. wallichii* Hook. the bracts are present and so are they in most of our other Philippine material.

SPERMACOCE Dill.

Spermacoce meyeniana Walp.

Field-note:—Erect and widely spreading biennial herb; stem 1 foot to 1 yard high, branched from near the base, green and angular; branches ascending, similar to the stem and the lower ones nearly as long; leaves flat, thinly coriaceous, much paler green beneath; inflorescence dense, axillary, pale green.

Represented by number 12937, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, April, 1911.

It thrives in compact red clay along the trail to Napsan at 750 feet in dense humid forests.

This species may be exactly *Hedyotis congesta* R. Br.

STREBLOSA Val.

Streblosa glabra Val.

Field-note:—Erect or suberect low suffrutescent perennial; stem 1 foot high, dark green, smooth, subherbaceous, erect or ascending and reclining toward the base, crooked, unbranched, 0.25 inch thick; leaves horizontal or descending, brightly shining and deep green above, much lighter or paler green beneath, membranous, flat or nearly so; young infrutescence usually from the upper leaf axils, the virgate dark green branchlets divaricate; fruits also dark green, soft pubescent, 0.15 inch long, sessile, subtended by green bracts, ellipsoid, terete and smooth; calyx of 5 imbricate segments, united at the base and forming a rugosely enlarged zone, the sides of the acuminate segments sharply folded upon the inner side; corolla buds imbricate and slightly twisted from left to right, the 5 lobes ultimately splitting down below the middle, the basal one third tubular, glabrous; stamens 5, also glabrous, inserted upon the basal portion of the corolla tube, not exerted, erect; filaments one half as long as the anthers, free; anthers linearly 2-lobed at the base, linear or lanceolate, acuminate, basifixed, more or less united and enclosing the stigma; style slender, glabrous; stigma submitraform; ovary superior or nearly so, surrounded by 5 lobular disk appendages, glabrous,

subcompressed, 2-celled, each cell contains a single pendulous flattened ovule.

Represented by number 12885, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

Discovered in rich moist humus covered soil of humid forests at 750 feet along the trail to Napsan.

A monotypic genus previously known only from Borneo.

SARCOCEPHALUS Afzel.

Sarcocephalus fluviatilis Elm. n. sp.

Shrubs; stem crooked, 1 dm. thick, angular or wadded, 3 to 5 m. high, branched from below the middle; wood sappy white, quite heavy and moderately hard, without odor or taste; bark gray on the branches, dull brown on the stem; branches crookedly rebranched, horizontally spreading; the branchlets lax, numerous, ascendingly curved, usually with a fusiform thickening, puberulent or finely hairy toward their ends. Leaves in few to several pairs toward the distal ends of the twigs, obovately oblong or the smaller ones oblanceolate, averaging 12.5 cm. long by 5 cm. wide above the middle, obtusely and occasionally inequilaterally rounded at the base, terminated by a short blunt apex or in the smaller blades sharply acute, entire, spreading horizontally, recurved at distal end, otherwise flat, submembranous, glabrous and dark velvety green above, much paler and lighter green beneath; midvein prominent beneath, olivaceous hairy in the dry state; lateral pairs 7 to 9, ascendingly curved, tips reticulately united, less prominent and pubescent; reticulations evident, subglabrous, otherwise the leaf surface is glabrous except in the very young state; petiole less than 1 cm. long, stout, pubescent or glabrate when old; stipule caducous, brown, 1 to 1.5 cm. long, linearly oblong, hairy on the back especially below the middle, flat, 4.5 mm. wide; heads solitary, terminal, 4 cm. across, creamy white except the green calyx; peduncle 2 cm. long, suberect, glabrate, minutely lenticelled, subtended by a pair of stipular bracts, stout and usually angular; calyx glabrous, angularly compressed, 3 to 4 mm. long, the basal one third encasing the ovary, the upper two thirds green

and united or separating into 5 lanceolately linear segments whose apices usually terminate into setae-like tails, 4 mm. long, finely carinate; receptacle subtended by a thick rim, the individual flowers subtended by minute glabrous involucre bracts; corolla creamy white, usually curved, 1 to 1.5 cm. long, tubular but narrowest toward the base, glabrous or a trifle strigose on the outside in the region of the throat; segments 5, oblong, 2.5 mm. long, 1 mm. wide, roundly obtuse at apex, irregularly spreading; anthers 5, inserted in the throat, subalternating with the segments, upon 0.5 mm. long glabrous filaments, finely sagittate at the base, basifixed, linear, 1.5 mm. long; style relatively thick, subterete, fleshy, glabrous, exerted and usually curved, terminated by a subglobose stigma; cells of the ovary 2, subcompressed, pendant, numerous ovuled; fruiting heads subpendant, grayish yellow, ovoidly or irregularly globose, 5 cm. long, straw brown, truncate at apex, angled, sharply pointed toward the base, separating into 2 equal halves, 6 mm. across the thickened top; seeds brown, nearly 2 mm. long, subcompressed, sparsely strigose or puberulent, at the upper end provided with a beard of yellowish brown hairs, the opposite end provided with a silvery coma or tuft of very fine 10 mm. long hairs;

Type specimen 12848, A. D. E. Elmer, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

Found only along deeply shaded streams and rivers at 1000 feet, upon ledges from where the branches had a chance of spreading over the cool water or creek beds.

Ours is a *Sarcocephalus* with solid concrete heads, though resembling *Nauclea strigosa* Korth. from which it differs in having the 5 not 4 calyx segments well laciniate instead of appendiculate, nerves on the underside of leaves always pubescent, stipules are also of a slightly different shape.

TARENNA Gaertn.

Tarenna fragrans (Blm.) K. et V.

Field-note:—Slender erect tree; stem terete, 7 inches thick, 35 feet high; wood burly, moderately hard and quite heavy, dirty white, odorless and tasteless; bark smooth, ater colored;

main branches from near the middle, ascending, rather slender, rebranched at the top only; twigs relatively short, bendable, ascending, angular; leaves well ascending, coriaceous, folded upon the upper slightly darker green surface, nerves beneath greenish white; infrutescence erect, the main stalks scurfy brown, the pedicels dull green; fruits perfectly globose, glaucous, 2-celled, with a number of dry yellowish green trigonous seeds in each.

Represented by number 12768, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

Collected in fertile humus covered soil of dense woods along the Iwahig river at 500 feet elevation.

This species cannot be referred to *Tarennia arborea* *Elm.* n. comb. (*Randia arborea* *Elm.* Leaf. Philip. Bot. III; 1005, 1911), which has pubescent under leaf surfaces and lateral nerves not at all oblique as in our present specimens. There are also floral differences.

TIMONIUS Rumph.

Timonius gammillii *Elm.*

Field-note:—Shrub-like tree; stem 3 inches thick, rather crooked, 15 feet high, scantily branched toward the top only; wood heavy, nearly avellaneus toward the center at least, odorless and tasteless; bark ater, smooth; branches slender and spreading, the tips suberect; leaves thinly coriaceous, nearly flat, darker green and shining on the upper surface, horizontal, the tip more or less recurved; infrutescence descending, green, hard, subglobose; fruits upon strict 2 cm. long subcompressed hairy peduncles, nearly 1 cm. long, including the persistent calyx rim, subglobose, with truncate ends, avellaneus when dry, short but densely pubescent, usually 3-clustered, the terminal one sessile, the 2 lateral upon short divaricate pedicels and subtended by a small sharply pointed bract; seeds numerous, more or less grouped into 5 or 6 masses and giving the fruit an angular shape; the persistent green calyx tube with a brown rim.

Represented by number 12734, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

Collected in a humus covered fertile soil of thick woods at 250 feet altitude.

***Timonius pulgarensis* Elm. n. sp.**

A rigidly interlaced shrub; branchlets erect, glabrous except the fulvus pubescent young tips, otherwise grayish brown, made rough by the numerous leaf scars 1.5 cm. apart. Leaves opposite, 1 to 3 pairs crowded toward the ends of the twigs, ascending or suberect, rigid, flat except the short sharply acuminate apex, base obtuse, entire margins subinvolute in the dry state, when young floccosely cinereous on the upper surface but which soon becomes glabrous and shining, beneath fulvus strigose or appressed pubescent, mostly obovately oblong, the larger blades 12.5 cm. long, 5 cm. wide across the middle or a trifle above this; midvein very prominent beneath toward the base, densely fulvus hairy; lateral pairs 7, subparallel, very oblique, their tips slenderly curved, reticulations very fine and minute; petiole extremely short and thick, less than 5 mm. long, flattened on the upper side; stipules also rigid, subpersistent, oblong, 1.5 cm. long, sharply acuminate, more or less united below the middle or toward the base. Fruits axillary, solitary; pedicel 1.5 cm. long, fulvus hairy, strict, ascending, obovoidly oblong, 1 to 1.5 cm. long, 5 to 8 mm. thick above the middle, rugose not ridged or only obscurely so, silky or fulvus pubescent, subtended by a pair of finely setaceous and similarly pubescent 1.25 cm. long bracts, 9 to 11-seeded; persistent calyx 1.25 cm. long, brown and softly pubescent, the basal portion united into a tube, the 5 segments linearly setaceous.

Type specimen 13201, A. D. E. Elmer, Puerto Princesa (Mt. Pulgar), Palawan, May, 1911.

This very distinct species was discovered in the low and dense chaparral growth on the rocky summit at 4250 feet of the mountain whose name it bears.

***Timonius palawanensis* Elm. n. sp.**

A strict slender shrub-like tree; stem 7.5 cm. thick, 7 m. high, terete, branched from the middle; wood moderately hard, sappy white, a trifle bitter, odorless; bark smooth, grayish white;

branches divaricate, sparingly rebranched, forming an elongated crown; twigs suberect, roughened with scars, grayish green, only the young apical portion olivaceous hairy. Leaves thinly coriaceous, ascending or horizontally disposed, much deeper green on the upper side, the young leaves light green, finely pubescent beneath, the upper surface soon becoming glabrous, unequally brown in the dry state, diverse in size, opposite, crowded toward the distal ends of the branchlets, apex obtuse but the tip very sharp and hairy, gradually narrowed toward the pandurate base, obovately oblong, 2.5 dm. long by 8.5 cm. wide a trifle above the middle, margins thin and entire, 1 cm. wide at the base; petiole stout, 3 to 5 mm. long, olivaceous pubescent; midvein very conspicuous beneath, similarly pubescent; lateral nerves 7 to 10 on a side, strongly ascending and curved, also pubescent, cross bars faint; stipule deciduous, 1.25 cm. long, broadly ovate, terminated into a tail-like point which as well as the edges are densely pubescent, otherwise only sparsely so. Inflorescence erect, solitary and erect or when 3 the lateral ones divaricate, rigid, the stalks green and similarly hairy; peduncle 1 to 3 cm. long, straight, stout, subtended by bracts, circinately branched toward the top; ultimate segments and basal portion of calyx densely tawny; calyx cup shaped, cinereous in the middle region, the truncate or 5-apiculate calyx rim tawny and 4 mm. across, scarcely any deeper, hard and rigid, sessile, usually subtended by small linear similarly colored hairs; corolla densely velvety on the outside, nearly 2 cm. long, otherwise glabrous, gradually tapering from base to throat, creamy white; segments 4, reflexed or rotately spreading, fleshy and padded on the upper glabrous side, nearly 1 cm. long, oblong, obtuse at apex; anthers also 4, alternating with the segments, attached 2 to 3 mm. below the throat, upon short, flattened and glabrous filaments, dorsifixed, linear, outwardly curved at the distal end, sharply sagittate at the base, strigose on the back above the middle, dull yellow or brownish so; style striate, terete, 5 to 8 mm. long, subglabrous or puberulent, minutely lobulate at the apex, 0.75 mm. thick.

Type specimen 12705, *A. D. E. Elmer*, Brooks Point (Addison Peak), Palawan, February, 1911.

Discovered in deep fertile soil of creek banks of well shaded woods at 100 feet altitude. The Tagbanuas call it "Bunkol."

These staminate flowering specimens though quite similar are yet distinguishable from the staminate type of *T. valetonii* Elm.

WENDLANDIA Bartl.

Wendlandia luzoniensis DC.

Field-note:—A small tree; stem 6 inches thick, 20 feet high, branched from the middle; wood dark, heavy, dingy or yellowish white, without odor or taste; bark checked, brown; branches smooth, yellowish brown, the few slender twigs ascending; leaves thickly membranous, descending, folded upon the upper deeper green surface; panicle terminal, pale green except the white slightly fragrant flowers; anthers yellow.

Represented by number 12748, *Elmer*, Puerto Princesa (Mt. Pulgar), Palawan, March, 1911.

Collected in shallow red soil with a gravelly subsoil upon wooded stream banks at 250 feet.